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on the marine ichthyfaunæ of isolated islands and distribution by ocean currents greater than its slight systematic interest.

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## NOTES ON SOME ADIRONDACK REPTILES AND AMPHIBIANS.

In the spring of 1900, and again in 1901 and 1903, the writer spent from a week to three weeks in the Adirondacks in the vicinity of Axtion, Franklin County, New York, giving courses of lectures on fish culture and fish and game protection to the junior and senior classes of the College of Forestry of Cornell University. Besides the formal lectures, laboratory demonstrations and numerous field trips or excursions were conducted. An effort was made to train the students in making and recording observations on the plants and on the various classes of animals found in the forests, and to give them some familiarity with the mammals and birds of the forest and the fishes of the streams and lakes. Some attention was paid also to the reptiles and amphibians.

It was the practice of Dr. B. E. Farnow, Dean of the College of Forestry, to take the juniors and seniors each spring to the Cornell College Forest where certain phases of forestry work and instruction could be carried on most concretely. The headquarters were at Axtion on the Raquette River, just south of the Tupper and Saranac lakes.

The Raquette River frequently overflows its banks, and near Axtion there is considerable marsh land where frogs are numerous. Within a short distance of Axtion are several small lakes (or ponds, as they are locally called), such as the Spectacle Ponds, Hiawatha, Dawson, Rock, Fallensby and Ampersand, about which there is more or less suitable frog ground. It was about these and in the immediate

vicinity of Axton that the species here recorded were observed.

Among the forestry students whose observations contributed to this list special mention should be made of Messrs. Wilbur R. Mattoon, Frederick Dunlap, H. D. Aller, Henry W. Georgi, and Hiram Earl Kinne.

The time spent each spring at Axton was as follows: In 1900, May 6 to 16; in 1901, April 28 to May 12; in 1903, April 26 to May 14, both dates inclusive in each case.

At this time of year it is usually quite cool in that part of the Adirondacks. Reptiles and amphibians are not yet numerous or very active. There is usually some snow on the mountains and in protected places, and new snow is apt to fall any day. For example, on the night of May 9 (1900), it snowed all night and continued the next day; the ground was frozen hard and well covered with snow, the temperature at noon being 28°. A week later it had warmed perceptibly, the vegetation was bursting into leaf and flower, migratory birds were much in evidence, and frogs were heard in all suitable places.

In 1901, the season was at least 2 weeks ahead of that of 1900; only a little snow in sight, (except on Mt. Seward, Mt. Marcy and Whiteface, which were still white), and flowers much more abundant. Even on the first day (April 28) toads were seen spawning in large numbers in the pools along the road, great masses of spawn being noted in several places. At Axton at night a great many of some species (probably toads) with a gutteral note, and a few piping notes, were heard.

The season of 1903 was less advanced and very dry, the high water having come a month earlier than usual. On the day of my arrival (April 26), a good many coarse-voiced frogs were singing at noon in a marsh at Tupper Lake.

Following is a list of the species observed:

1. *Thamnophis sirtalis*, Common Garter Snake. Very common. Two specimens collected May 14 (1900), one of which vomited a half dozen angle-worms. On April 28 (1901), found 7 dead in the road and one alive. Many others seen at various times. April 28 (1903), caught one at Rock Pond; two days later (April 30), saw a smashed one in the road; and on May 10, still another on Le Boef's tote road.

2. *Thamnophis sirtalis ordinatus*, Spotted Garter Snake. Not common. The only specimen seen was brought in May 3 (1903), by Mr. Frederick Dunlap.

3. *Thamnophis sauritus*. Ribbon Snake. Frequent, but less common than the preceding. May 16 (1900), one seen; May 9 (1901), one noted.

4. *Storeria occipitomaculata*. Red-bellied Snake. A specimen 10 inches long found dead in road between hotel and bridge, April 28 (1903).

5. *Chrysemys picta*. Painted Turtle. Not common; one was noted in 1900; one observed at Fallensby Pond in May (1903).

6. *Ambystoma maculatum*. Spotted Salamander. Not common; one obtained by Dr. John Gifford, May 16 (1900); April 28 (1903), got a bunch of eggs in a little bayou north of Axton, and three days later (May 1) found many bunches of eggs, believed to be this, at roadside.

7. *Eurycea bislineata*. Two-lined Salamander. A small example collected by Mr. H. E. Kinne, May 7 (1903).

8. *Notophthalmus viridescens*. Pond Salamander. A good many seen in water along shore of Dawson Pond, May 6 (1903). Habits same as observed at Lake Mashipacong, N. J., May 7 and 8 (1904).

9. *Bufo americanus*. American Toad. Very common. May 13 (1900). On April 28 (1901),

seen spawning in great numbers; good many in pools along the roads and great masses of spawn in several places. At night heard a great many gutteral notes and a few piping notes, a regular concert, the gutteral notes believed to be by toads, as Dr. Gifford suggested. Two days later (April 30) toads were singing loudly at night in the overflow part of the river near Axtion. They were not heard to sing in the day time. Many were noted May 9 (1901).

First one of 1903 seen April 28, just crawling out of its winter quarters. While walking over to Rock Pond two days later (April 30), saw 4, all fresh looking, and one very small, not over  $\frac{1}{2}$  inch long; another seen in afternoon, also one the next day; on May 11 they were common.

10. *Acris gryllus*. Cricket Frog. Probably common; heard April 26 (1903), and at other times.

11. *Hyla crucifer*. Pickering's Tree-toad; Spring Peeper. Often heard; probably common. One was taken May 9, 1901.

12. *Rana clamitans*. Green Frog. Common. Three collected at Hiawatha Pond, May 7 (1903), by Mr. Aller.

Frogs of one or more species were very common about Axtion. They were heard almost every night, sometimes quite numerously. Noted singing particularly on April 26, 27, 28, and 29 (1903), in a marsh near Tupper Lake and all about Axtion.

13. *Rana catesbeiana*. Bullfrog. Not rare; one seen April 29 (1901); others heard at various times.

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#### A BURROWING HABIT OF *CNEMIDOPHORUS TESSELLATUS* (SAY).

In view of the fact that so little has been written about the habits of lizards, I submit the following